SERVICE MANUAL

AT251

marantz

model AT251

Audio Timer

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.
Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified. If you order by mail, fulfil MARANTZ order forms.

The following information must be supplied to eliminate delays in processing your order:
1. Complete address
2. Complete part numbers and quanties required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

TECHNICAL ASSISTANCE

Should you require any other technical support, do not hesitate to contact the Technical Department of
MARANTZ EUROPE & Co.
Avenue Louise 326 - Bte. 32
B-1050 Brussels
Belgium
Telephone: (02) 6407830 (10 l)
Telex: 26602
Fax.: (02) 649.29.20

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

AUSTRALIA
MARANTZ AUSTRALIA
PTY., Ltd.
19 Chard Road
Brookvale, NSW 2100
Australia
Telex: 24121

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

EIRE
MARANTZ IRELAND Ltd.
Newstead
Glonkeagh
Dublin 4
Telex: 25200

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

THE NETHERLANDS
MARANTZ
De Limiet 3
4131 NR Vianen
The Netherlands
Telex: 47679

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
ADAMCO S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11410
Greece
Telex: 216.795

ITALY
MARANTZ ITALIANA S.p.A.
Via Monte Napoleone 10
20121 Milano
Italia

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 201530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Rainer House
Ove Street, 10
Doornfontein
Johannesburg
Telex: 483.456

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

U.S.A.
MARANTZ COMPANY, Inc.
National Service Department
P.O.Box 577
Chatsworth, CA 91 311
U.S.A.

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for the Marantz Model AT251 Audio Timer.

Servicing information and voltage data included, in this manual are intended for use by knowledgeable and experienced personnel only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of circuitry operation.

The parts list furnishes complete ordering information. Most replacement parts should be ordered from the Marantz Company. However, a simple description is included for parts which can be obtained locally.

1. P. W. BOARDS

As can be seen from the circuit diagram the chassis of Model AT251 consists of the following units. Each unit monnted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. Main ·····060X
2. CPU ·····061X
3. Sub·····062X

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2. TIMR FUNCTIONS

●Functions of Control Switches

1) POWER

Momentary type. The output is changed over along with the output of the terminal irrespective of any mode and enable/disable status of TIMER 1(TIMER 2) by this switch. The switch is effective in all modes.

2) TIME SET

Momentary type. It displays the current time. If the switch is keyed in TIMER mode, the time under display is inputted as timer on/off time to display the current time clearing TIMER mode. If the switch is depressed in TIME ADJUST mode, It is instantly switched to NORMAL mode to start timer counting.

3) TIME ADJUST

Momentary type. It is used to set mode to TIME ADJUST. The HOUR+, HOUR−, MINUTE+, MINUTE−, TIME SET, POWER STANDBY keys are effective in this mode. Other keys are ineffective.

4) TIMER 1 (TIMER 2)

Momentary type. It is effective only in NORMAL mode. It enables or disables TIMER 1 (TIMER 2). At the same time, it sets TIMER 1 LED (TIMER 2 LED) terminal to the high or low level. TIMER 1 (TIMER 2) is disabled when TIMER mode is cleared. Enable it with this switch. However, it is not enabled if both TIMER 1 ON (TIMER 2 ON) and TIMER 1 OFF (TIMER 2 OFF) times are not set.

5) CLEAR

Momentary type. The switch is effective only in TIMER mode. It clears precedingly set time.

6) SECOND

Momentary type. The switch is effective only in NORMAL mode. The 1st digit of minutes and seconds of the current time are displayed.

7) TIMER 1/TIMER 2 ON (TIMER 1/TIMER 2 OFF)

Momentary type. The switch sets TIMER mode. The time set to TIMER 1/TIMER 2 ON (TIMER 1/TIMER 2 OFF) is displayed on LED's. The HOUR+, HOUR−, MINUTE+, MINUTE−, TIME SET, CLEAR, POWER STANDBY keys are effective in this mode.
Other keys are ineffective. TIMER 1 (TIMER 2) is disabled when this key is depressed.

8) HOUR+(HOUR−)

Momentary type. The position of hours displayed on the LED is incremented (decremented).

9) MINUTE+(MINUTE−)

Momentary type. The position of minutes displayed on the LED is incremented (decremented).

10) 12H/24H

When the switch is set to the high level, 12 hours are displayed and when it is set to the low level, 24 hours are displayed.

11) 50Hz/60Hz

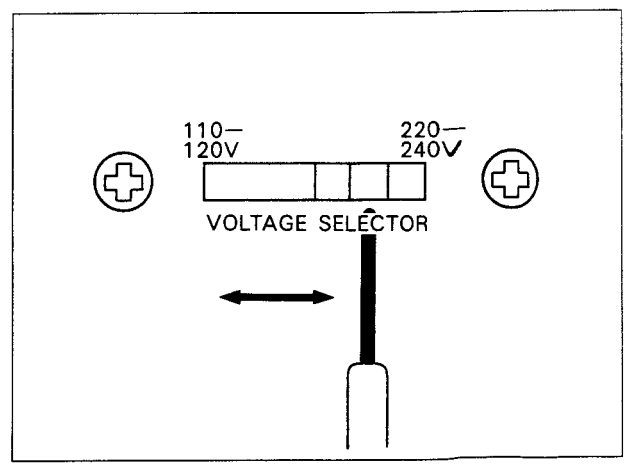
When the switch is set to the high level, this allows 50 Hz time base operation, and when set to the low level, this allows 60 Hz time base operation.

3. VOLTAGE CONVERSION

●EUROPEAN MODEL ONLY

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

Voltage Conversion Chart



CAUTION

DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.

Note on safety:

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

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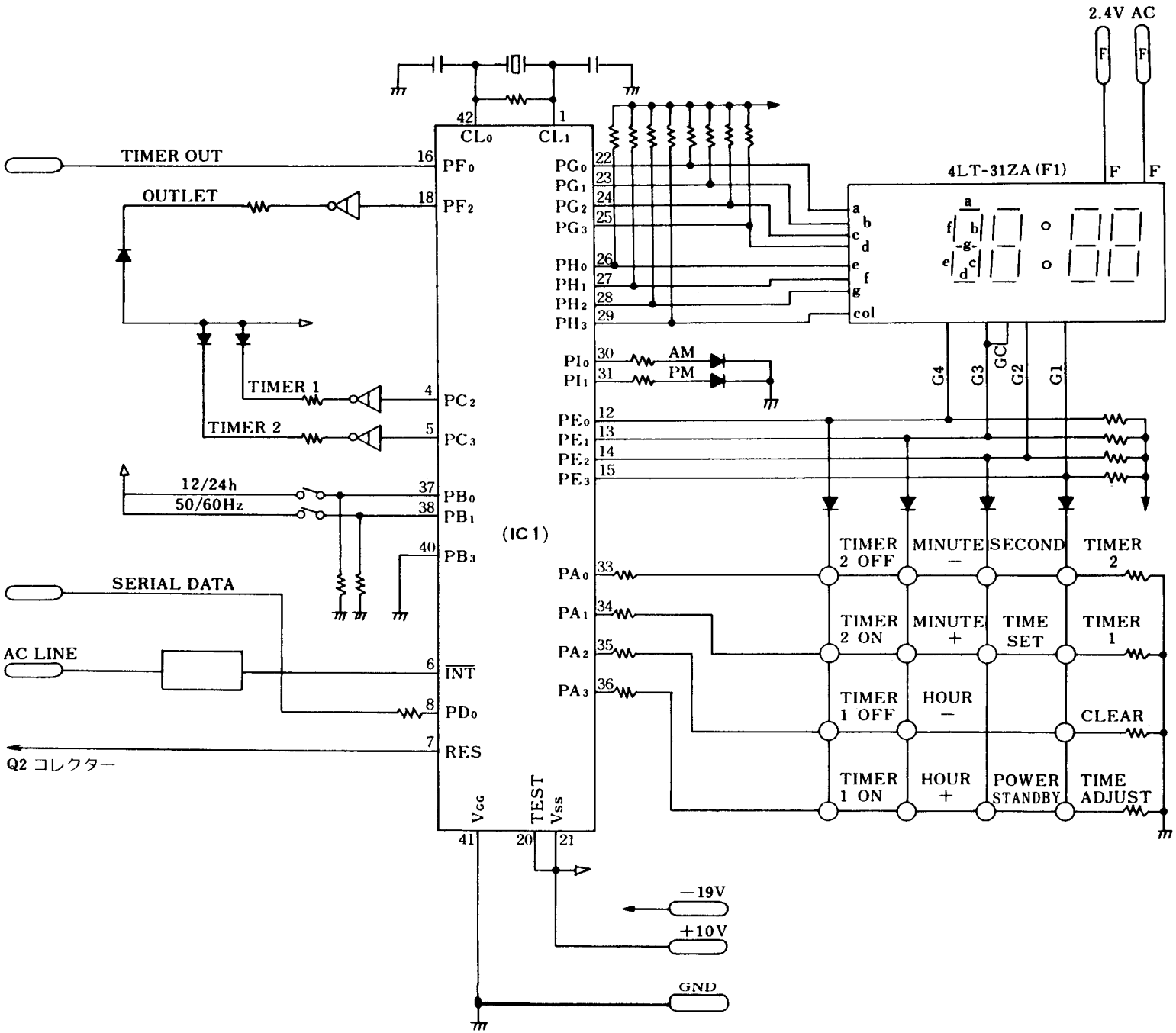
2.4V AC
4LT-31ZA (F1)
TIMER OUT
OUTLET
TIMER 1
TIMER 2
12/24h
50/60Hz
SERIAL DATA
AC LINE
Q2 コレクター
AM
PM
(IC 1)
CL0
CL1
INT
RES
VGG
TEST
VSS
−19V
+10V
GND
G4
G3
GC
G2
G1
TIMER 2 OFF
MINUTE −
SECOND
TIMER 2
TIMER 2 ON
MINUTE +
TIME SET
TIMER 1
TIMER 1 OFF
HOUR −
CLEAR
TIMER 1 ON
HOUR +
POWER STANDBY
TIME ADJUST

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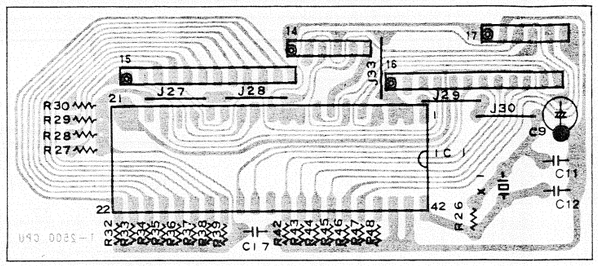
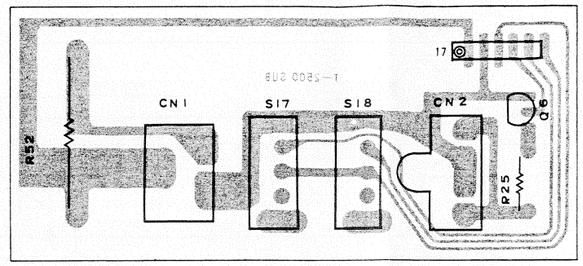
4. COMPONENT LOCATIONS

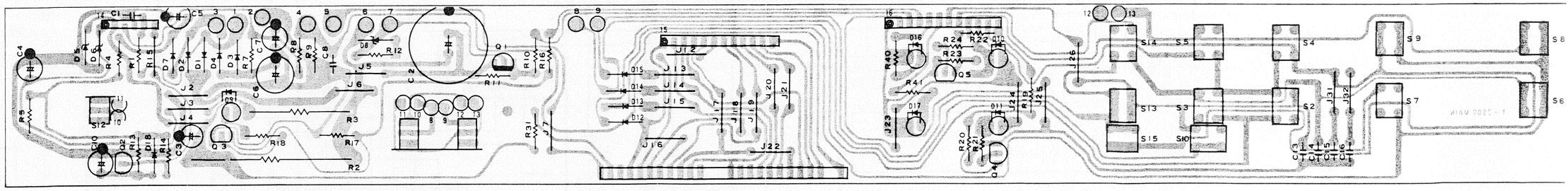
CPU Assembly (061X) Component Locations



Sub Assembly (062X) Component Locations



Main Assembly (060X) Component Locations



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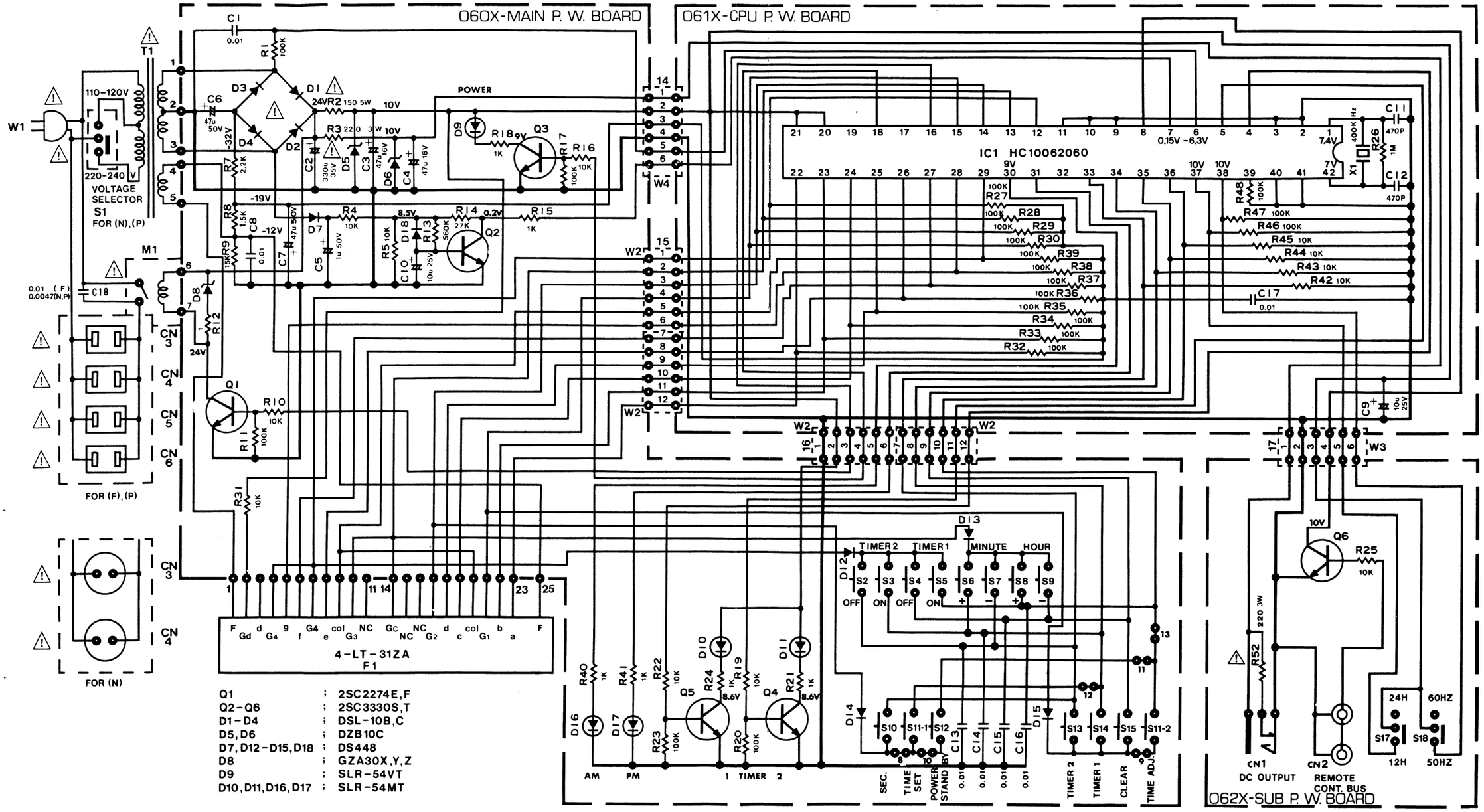
5. SCHEMATIC DIAGRAM



Q1	;	2SC2274E,F
Q2-Q6	;	2SC3330S,T
D1-D4	;	DSL-10B,C
D5,D6	;	DZB10C
D7,D12-D15,D18	;	DS448
D8	;	GZA30X,Y,Z
D9	;	SLR-54VT
D10,D11,D16,D17	;	SLR-54MT

NOTE ON SAFETY:

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

Components and wiring are subject to change for modification without notice.

Model AT251

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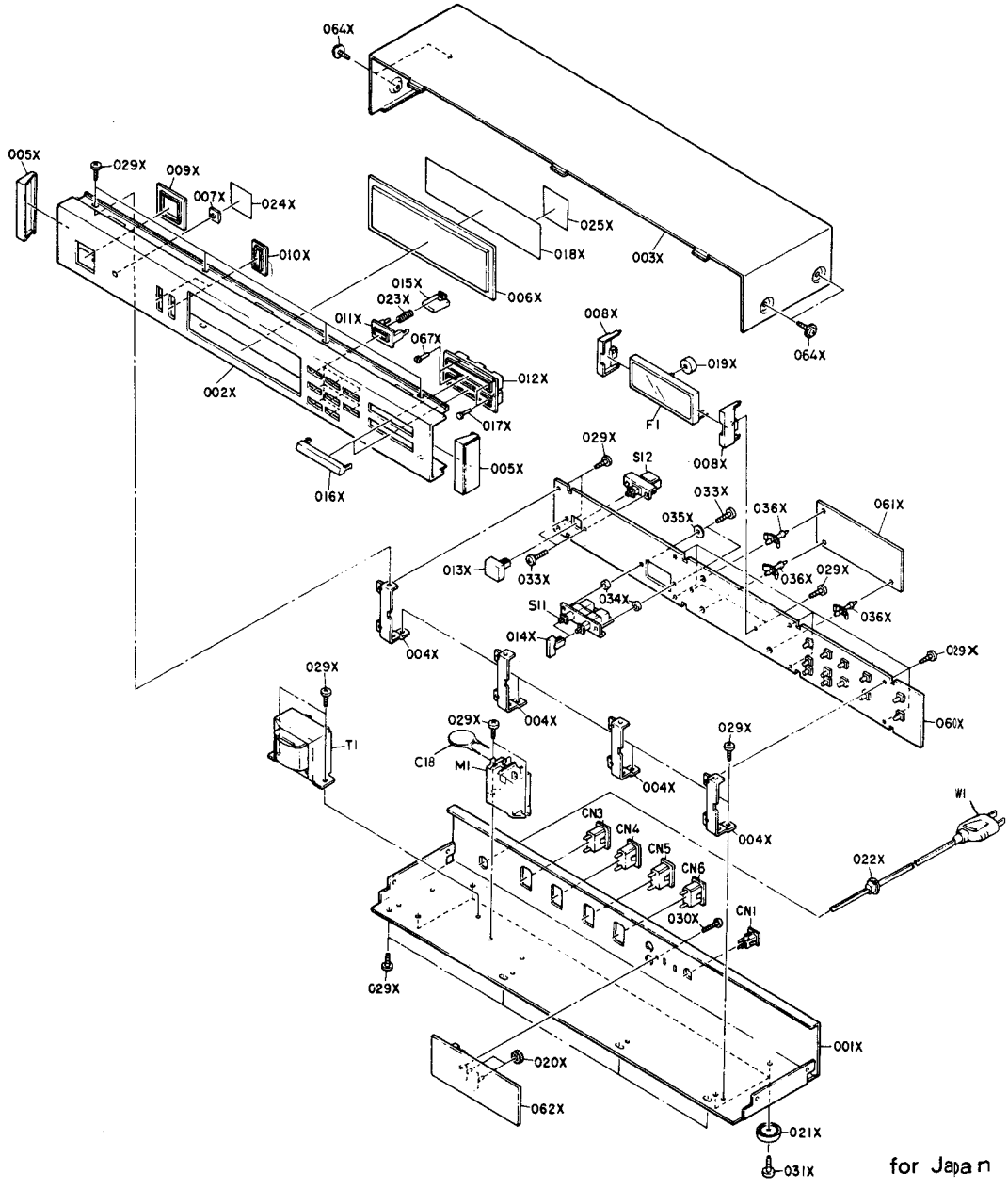
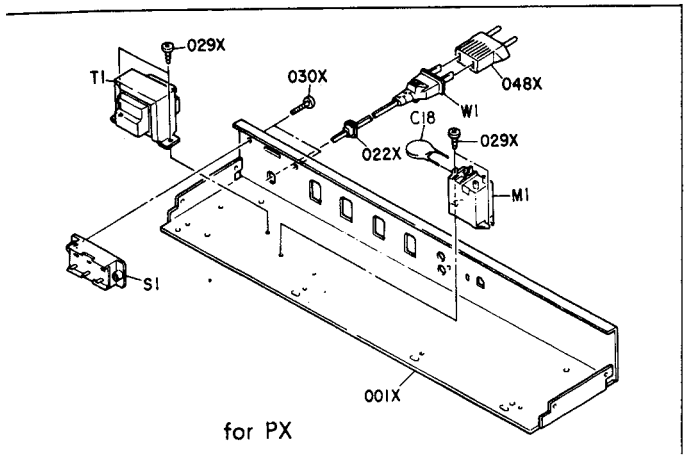
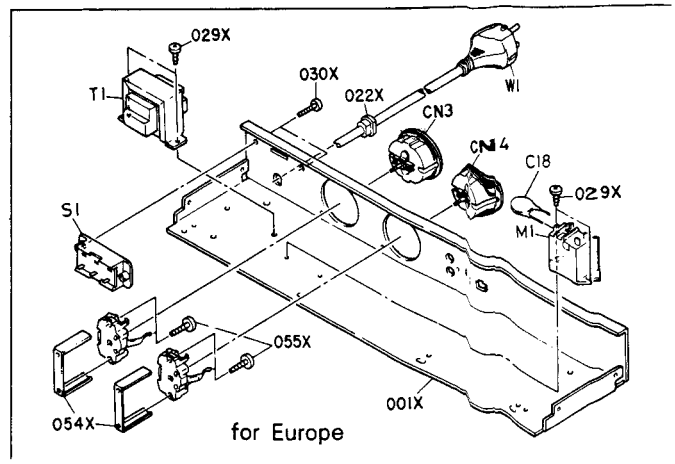
6. (CO1 –99) EXPLODED VIEW AND PARTS LIST



for Japan



for PX



for Europe

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(N) : for Europe
(P) : for PX
(F) : for Japan

REF. DESIG.	PARTS NO.	DESCRIPTION	
PU03	380Z248400	Front Panel Ass'y	BLACK
PU03	380Z248410	Front Panel Ass'y	GOLD
002X	380Z248020	Front Panel	BLACK
002X	380Z248010	Front Panel	GOLD
005X	408H067210	Cap, Front Panel Side	BLACK
005X	408H067010	Cap, Front Panel Side	GOLD
006X	132H158110	Window	
007X	125H158010	Window, Power Standby	
009X	380Z259010	Bush, Power Standby	BLACK
009X	380Z259020	Bush, Power Standby	GOLD
010X	239H259120	Bnsh, Time Set/Adj.	BLACK
010X	239H259020	Bush, Time Set/Adj.	GOLD
011X	403H259210	Bush, Tact	BLACK
011X	403H259010	Bush, Tact	GOLD
012X	380Z259030	Bush, Hour/Minute	BLACK
012X	380Z259040	Bush, Hour/Minute	GOLD
015X	403H154310	Knob, Tact	BLACK
015X	403H154390	Knob, Tact	GOLD
016X	289H154220	Knob, Hour/Minute	BLACK
016X	289H154020	Knob, Hour/Minute	GOLD
017X	380Z254010	Pin, Joint Pin	
018X	380Z303010	Mask, Blue Smoke	
023X	102T115010	Spring, Push Switch	
024X	380Z303020	Mask, Power Standby	
025X	380Z303030	Mask	
067X	380Z254020	Pin, Joint Pin	

REF. DESIG.	PARTS NO.	DESCRIPTION	
001X	380Z105030	Chassis	N
001X	380Z105020	Chassis	P
001X	380Z105010	Chassis	F
003X	004T257310	Lid, Top Cover	BLACK
003X	004T257320	Lid, Top Cover	GOLD
004X	004T104020	Retainer	
008X	380Z104010	Retainer	
013X	158T270110	Button, Power Standby	BLACK
013X	158T270010	Button, Power Standby	GOLD
014X	280H270030	Button, Time Set	BLACK
014X	280H270010	Button, Time Set	GOLD
019X	380Z056010	Buffer	
020X	380Z303040	Mask	
021X	011T057010	Leg	
022X	1455259050	Bush, AC Power Cord	N
022X	380Z259050	Bush, AC Power Cord	P, F
029X	51280306B0	B. T. Screw, 3x6	
030X	51280310U0	B. T. Screw, 3x10	
031X	51280408U0	B. T. Screw, 4x8	
033X	51060308A9	P. H. M. Screw, M3x8	
034X	380Z055010	Collar	
035X	380Z012010	Washer, Nylon 3x6x0.5	
036X	380Z101010	Support	
054X	004T104030	Retainer, AC Outlet	
055X	51280412B0	B. T. Screw, 4x12	
064X	51260308U0	B. T. Screw (W/W), 3x8	
⚠C18	DK1747201R	Ceramic 4700pF 400VAC	N, P
⚠C18	DK1810301R	Ceramic 0.01μF 125VAC	F
CN1	YJ040013AR	Jack, DC Outlet	
⚠CN3	YJ04000870	Jack, AC Outlet	N
⚠CN3	YJ040014AR	Jack, AC Outlet	P, F
⚠CN4	YJ04000870	Jack, AC Outlet	N
⚠CN4	YJ040014AR	Jack, AC Outlet	P, F
⚠CN5	YJ040014AR	Jack, AC Outlet	P, F
⚠CN6	YJ040014AR	Jack, AC Outlet	P, F
⚠M1	LY124002AR	Relay, 24VDC	N, P
⚠M1	LY124003AR	Relay, 24VDC	F
⚠S1	SS010206AR	Slide Sw. Voltage Selector	N, P
⚠T1	TS100048AR	Power Transf.	N, P
⚠T1	TS100049AR	Power Transf.	F
⚠W1	YC019001AR	AC Power Cord	N
⚠W1	YC019002AR	AC Power Cord	P
⚠W1	YC019003AR	AC Power Cord	F

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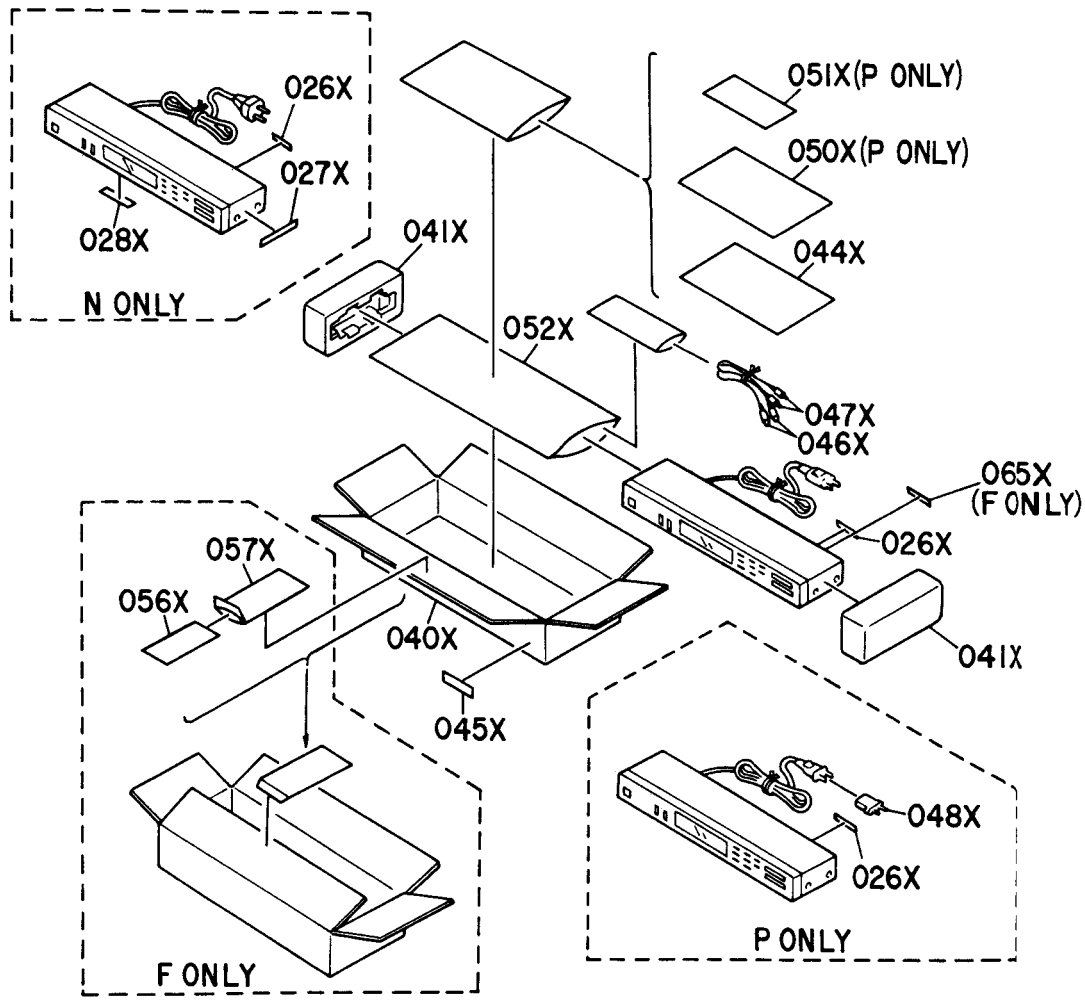
7. (H01-99) PACKING MATERIALS



(N) : for Europe
(P) : for PX
(F) : for Japan

REF. DESIG.	PARTS NO.	DESCRIPTION	
026X	2112265110	Indicator Serial No. Label	
027X	2911861140	Label, Caution	N
028X	2911861110	Label, Caution	N
040X	380Z801010	Packing Case	N, F
040X	380Z801020	Packing Case	P
041X	004T809030	Cushion	
044X	380Z851310	User Manual	N, P
044X	380Z851110	User Manual	F
045X	9526019060	Serial No. Card	N
045X	9526019050	Serial No. Card	P

REF. DESIG.	PARTS NO.	DESCRIPTION	
045X	9526019040	Serial No. Card	F
046X	ZD00400080	Connective Cord	
047X	ZD004001AR	Connective Cord	
048X	YJ04001240	AC Plug Adaptor	P
050X	416H854010	Warranty	P
051X	3435851210	User Manual	P
052X	380Z811010	Polyethy. Bag	
056X	9631000130	Warranty	F
057X	128T854010	Warranty	F
065X	380Z861010	Label, Caution	F

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8. ELECTRICAL PARTS LIST

(N) : for Europe
(P) : for PX
(F) : for Japan

REF. DESIG.	PARTS NO.	DESCRIPTION
		MAIN CIRCUIT BOARD
060X	YN380Z2310	P. W. Board, Main
	ZZ380Z1310	P. W. Board Ass'y
		CAPACITORS
C1	DK18103310	Ceramic, 0.01μF 50V
C2	EA33703510	Elect, 330μF 35V
C3	EA47601610	Elect, 47μF 16V
C4	EA47601610	Elect, 47μF 16V
C5	EA10505010	Elect, 1μF 50V
C6	EA47605010	Elect, 47μF 50V
C7	EA47605010	Elect, 47μF 50V
C8	DK18103310	Ceramic, 0.01μF 50V
C10	EA10602510	Elect, 10μF 25V
C13	DK18103310	Ceramic, 0.01μF 50V
C14	DK18103310	Ceramic, 0.01μF 50V
C15	DK18103310	Ceramic, 0.01μF 50V
C16	DK18103310	Ceramic, 0.01μF 50V
		RESISTORS
		(All Resistors are 1/6W and ±5%)
R1	GD05104160	100kΩ
⚠ R2	GS10151050	150Ω 5W, ±10%
⚠ R3	GS1022103R	220Ω 3W, ±10%
R4	GD05103160	10kΩ
R5	GD05103160	10kΩ
R7	GD05222160	2.2kΩ
R8	GD05152160	1.5kΩ
R9	GD05153160	15kΩ
R10	GD05103160	10kΩ
R11	GD05104160	100kΩ
R12	GD05010160	1Ω
R13	GD05564160	560kΩ
R14	GD05273160	27kΩ
R15	GD05102160	1kΩ
R16	GD05103160	10kΩ
R17	GD05104160	100kΩ
R18	GD05102160	1kΩ
R19	GD05103160	10kΩ
R20	GD05104160	100kΩ
R21	GD05102160	1kΩ
R22	GD05103160	10kΩ
R23	GD05104160	100kΩ
R24	GD05102160	1kΩ
R31	GD05103160	10kΩ
R40	GD05102160	1kΩ
R41	GD05102160	1kΩ

REF. DESIG.	PARTS NO.	DESCRIPTION
		SEMICONDUCTORS
Q1	HT322741E0	Transistor, 2SC2274 E, F
Q2	HT333302AR	Transistor, 2SC3330 S, T
Q3	HT333302AR	Transistor, 2SC3330 S, T
Q4	HT333302AR	Transistor, 2SC3330 S, T
Q5	HT333302AR	Transistor, 2SC3330 S, T
⚠ D1	HD200003AR	Diode, DSL-10B, C
⚠ D2	HD200003AR	Diode, DSL-10B, C
⚠ D3	HD200003AR	Diode, DSL-10B, C
⚠ D4	HD200003AR	Diode, DSL-10B, C
D5	HD300010AR	Zener, DZB10C
D6	HD300010AR	Zener, DZB10C
D7	HD20016030	Diode, DS448
D8	HD300011AR	Zener, GZA30X, Y, Z
D9	HI100023AR	LED, SLR-54VT
D10	HI100024AR	LED, SLR-54MT
D11	HI100024AR	LED, SLR-54MT
D12	HD20016030	Diode, DS448
D13	HD20016030	Diode, DS448
D14	HD20016030	Diode, DS448
D15	HD20016030	Diode, DS448
D16	HI100024AR	LED, SLR-54MT
D17	HI100024AR	LED, SLR-54MT
D18	HD20016030	Diode, DS448

M30y2

(N) : for Europe
(P) : for PX
(F) : for Japan

REF. DESIG.	PARTS NO.	DESCRIPTION
		MISCELLANEOUS
F1	HQ304001AR	Display Unit
S2	SP010106AR	Push Switch, Timer 2 OFF
S3	SP010106AR	Push Switch, Timer 2 ON
S4	SP010106AR	Push Switch, Timer 1 OFF
S5	SP010106AR	Push Switch, Timer 1 ON
S6	SP010106AR	Push Switch, Minute +
S7	SP010106AR	Push Switch, Minute −
S8	SP010106AR	Push Switch, Hour +
S9	SP010106AR	Push Switch, Hour −
S10	SP010106AR	Push Switch, Second
S11	SP020201AR	Push Switch, Time Set/Adj
S12	SP020109AR	Push Switch, Power Standby
S13	SP010106AR	Push Switch, Timer 2
S14	SP010106AR	Push Switch, Timer 1
S15	SP010106AR	Push Switch, Clear
W2	YU06140260	Jumper Lead, 6P
W4	YU06300260	Jumper Lead, 6P
		CPU CIRCUIT BOARD
061X	YN380Z2320	P. W. Board, CPU
	ZZ380Z1320	P. W. Board Ass'y
		CAPACITORS
C9	EA10602510	Elect, 10μF 25V
C11	DD15471370	Ceramic, 470pF 50V
C12	DD15471370	Ceramic, 470pF 50V
C17	CK18103310	Ceramic, 0.01μF 50V
		RESISTORS (All Resistors are 1/6W and ±5%)
R26	GD05105160	1MΩ
R27	GD05104160	100kΩ
R28	GD05104160	100kΩ
R29	GD05104160	100kΩ
R30	GD05104160	100kΩ
R32	GD05104160	100kΩ
R33	GD05104160	100kΩ
R34	GD05104160	100kΩ
R35	GD05104160	100kΩ
R36	GD05104160	100kΩ

REF. DESIG.	PARTS NO.	DESCRIPTION
R37	GD05104160	100kΩ
R38	GD05104160	100kΩ
R39	GD05104160	100kΩ
R42	GD05103160	10kΩ
R43	GD05103160	10kΩ
R44	GD05103160	10kΩ
R45	GD05103160	10kΩ
R46	GD05104160	100kΩ
R47	GD05104160	100kΩ
R48	GD05104160	100kΩ
		SEMICONDUCTOR
IC1	HC10062060	IC, μCOM43
		MISCELLANEOUS
W3	YU06200260	Jumper Lead, 6P
X1	FQ0400302R	Ceramic Vib. 400kHz
		SUB CIRCUIT BOARD
062X	YN380Z2330	P. W. Board, SUB
	ZZ380Z1330	P. W. Board Ass'y
		RESISTORS
R25	GD05103160	10kΩ 1/6W ±5%
△R52	GS1022103R	220Ω 3W ±10%
		SEMICONDUCTOR
Q6	HT333302AR	Transistor, 2SC3330 S, T
		MISCELLANEOUS
CN2	YT02020340	Terminal, 2P
S17	SS010207AR	Slide Switch, 12H/24H
S18	SS010207AR	Slide Switch, 50Hz/60Hz

(W01-99)	Assembly and Wiring
(TO1-99)	Adjustment
(X01-00)	Correction

NOTE ON SAFETY:
Symbol △ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol △. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

H3043

9. TECHNICAL SPECIFICATIONS

Power Requirement	AC110—120V/220—240V, 50/60Hz
Power Consumption	12W
Digital Display	4 digits fluorescent tube
Time Indication Accuracy	Depends on AC mains frequency
Outlet Rating	4 pieces total 450W(AC110~120V)/900W(AC220~240V)
Dimensions (W x H x D)	420 x 63 x 121 mm
Weight	1.5kg

Specifications and appearance are subject to change for modification without notice.

M3044

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